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CONNOLLY BOVE LODGE & HUTZ LLP  
SUITE 800  
1990 M STREET NW  
WASHINGTON, DC 20036-3425

EXAMINER

PERSINO, RAYMOND B

ART UNIT PAPER NUMBER

2682

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/067,360	<b>Applicant(s)</b> KUWATA ET AL	
	<b>Examiner</b> Raymond B. Persino	<b>Art Unit</b> 2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-37 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/20/2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-10, 14-16, 20, 21, 25, 26 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by MARKOW (US 6,137,890 A).

Regarding claim 1, MARKOW discloses an integrated information display and a piezoelectric sound generating device comprising a thin-plate piezoelectric element (118 of figure 8 and 9) serving as an oscillating source of a sound signal and a display device (100 of figures 8 and 9) serving as part of a resonator (column 6 line 44 to column 8 line 4).

Regarding claim 2, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the thin-plate piezoelectric element is attached to a resonance box (102 of figure 9) of said resonator (column 7 line 45 to column 8 line 4).

Regarding claim 3, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the display device (100 of figure 9) is located on a top surface of said resonator (column 7 line 45 to column 8 line 4).

Regarding claim 4, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the thin-plate piezoelectric element is constituted by a plurality of piezoelectric oscillators (column 2 lines 55-57).

Regarding claim 5, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that said thin-plate piezoelectric element is located in a lateral direction of said resonator and causes acoustic oscillation by repeating expansion and contraction in said lateral direction (column 1 lines 35-67 and column 7 line 31 to column 8 line 4).

Regarding claim 6, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the thin-plate piezoelectric element is connected to the thin flat display via an oscillation transfer pole (120 of figure 9, column 7 line 45 to column 8 line 4).

Regarding claim 7, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the display is an LCD display (column 4 line 66).

Regarding claim 8, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses an integrated information display and piezoelectric sound generating device comprising: a resonance box (made up of 102 and 100 of figure 9); a piezoelectric oscillator (118 of figure 9) attached to a surface of said resonance box; and a thin flat display (110 of figure 9) integrally formed with said resonance box (column 6 line 44 to column 8 line 4).

Regarding claim 9, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the thin flat display is integrally provided on a top surface of said resonance box (column 6 line 44 to column 8 line 4).

Regarding claim 10, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the piezoelectric oscillator is provided on an inner bottom surface of said resonance box (column 6 line 44 to column 8 line 4).

Regarding claim 14, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the piezoelectric oscillator is connected to the thin flat display via an oscillation transfer pole (120 of figure 9, column 7 line 45 to column 8 line 4).

Regarding claim 15, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the piezoelectric oscillator has a thin-plate body extending parallel to said thin flat display (column 6 line 44 to column 8 line 4).

Regarding claim 16, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the display is an LCD display (column 4 line 66).

Regarding claim 20, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that the resonance box is

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made of a plurality of materials having different oscillatory characteristics (column 6 lines 44 to column 7 line 10 and column 8 lines 58-67).

Regarding claim 21, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that part of the box that the piezoelectric oscillator is mounted (element 102) is a polycarbonate (column 6 lines 48-49) whereas the isolators (element 116) are made of rubber (column 7 lines 3-4).

Regarding claim 25, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further disclose that the piezoelectric oscillator is connected to sound signal leads (from 68 to 72 of figure 1) and said thin flat display is connected to display signal leads (from 54 to 60 of figure 1).

Regarding claim 26, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further disclose in figure 1 (see rejection of claim 25 above) that the signal leads connect to the piezoelectric oscillator and the display. Moreover, MARKOW discloses in figure 9 that the entirety of the piezoelectric oscillator and the display are surrounded by the resonant box and the resonant box is not shown to house the display driver or the audio amplifier. Further, the wire that connects the display driver and audio amplifier to the display and piezoelectric oscillator physically occupies space. Thus, for the wire to connect from outside the box to something inside the box, requires that the wire pass through the surface of the resonant box. As such, the wire is passing through a hole in the resonant box.

Regarding claim 29, MARKOW further disclose a mobile information terminal comprising: a resonance box (made up by elements 102 and 100) incorporated in a

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body of said mobile information terminal; a piezoelectric oscillator (118 of figure 8 and 9); provided on a bottom surface of said resonance box; and a thin flat display (100 of figures 8 and 9) formed on a top surface of said resonance box so that said thin flat display is located on a front face of said mobile information terminal (column 6 line 44 to column 8 line 4).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over MARKOW (US 6,137,890 A) in view of MARKOW-2 (US 5,796,854 A).

Regarding claim 11, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not explicitly disclose that the piezoelectric oscillator is provided on an outer bottom surface of said resonance box. MARKOW-2 discloses that a piezoelectric oscillator provided on an outer bottom surface of said resonance box (see element 58 on the outside of element 74 in figure 6 and column 5 lines 13-48). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the piezoelectric oscillator being provided on an outer bottom surface of said resonance box. This would be useful in that it would add speakers that would add the ability to project sound away

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from the display, thus increasing spatial imaging and/or provide better acoustic performance for an audience during a presentation (see MARKOW-2 column 3 lines 35-63).

Regarding claim 12, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not explicitly disclose that the piezoelectric oscillator is provided on each of inner and outer bottom surfaces of said resonance box. MARKOW-2 discloses that a piezoelectric oscillator provided on inner and outer bottom surfaces of said resonance box (see element 58 on the outside of element 74 and element 56 on the inside in figure 6 and see column 5 lines 13-48). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the piezoelectric oscillator being provided on each of inner and outer bottom surfaces of said resonance box. This would be useful in that it would add speakers that would add the ability to project sound away from the display, thus increasing spatial imaging and/or provide better acoustic performance for an audience during a presentation (see MARKOW-2 column 3 lines 35-63). Having the inside speaker provides a center speaker for surround sound (see MARKOW-2 column 4 line 40 to column 5 line 7).

5. Claims 13 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over MARKOW (US 6,137,890 A) in view of LIN (US 4,979,219 A).

Regarding claim 13, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not disclose a plurality of sound openings provided adjacent to said thin flat display on the top surface of said



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resonance box. LIN discloses a plurality of sound openings are provided adjacent to a resonance box (column 2 line 56 to 57). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made for there to be a plurality of sound openings are provided. MARKOW's invention would benefit from the sound openings of LIN in that the modification would result in an enhanced resonance effect of the sound waves, thus the volume in decibels of the speaker is promoted and the acoustic property is also improved.

Regarding claim 30, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not disclose a plurality of sound openings provided adjacent to said thin flat display on the top surface of said resonance box. LIN discloses a plurality of sound openings are provided adjacent to a resonance box (column 2 line 56 to 57). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made for there to be a plurality of sound openings are provided. MARKOW's invention would benefit from the sound openings of LIN in that the modification would result in an enhanced resonance effect of the sound waves, thus the volume in decibels of the speaker is promoted and the acoustic property is also improved.

6. Claims 17-19, 22, 23, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over MARKOW (US 6,137,890 A) in view of an examiner's official notice.

Regarding claims 17-19, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not explicitly that the display is an organic electro-luminescent display, a reflection liquid crystal display, or a

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thin-film display formed on a resin substrate. Nevertheless, the examiner takes official notice that these are known display types. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the display be any of an organic electro-luminescent display, a reflection liquid crystal display, or a thin-film display formed on a resin substrate. This choice of display type is a routine engineering decision predicated on the requirements for the display. Considerations include cost, color reproduction, visibility in low/high light conditions, response time, and power consumption, and resolution. Anyone of the above display types and a different combination of the above stated qualities and would be selected based on the needs of the device the display is to become a part of.

Regarding claim 22, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not explicitly disclose that a polycarbonate has a lower elastic coefficient than rubber. Nevertheless, the examiner takes official notice that it was known in the art at the time of the invention for polycarbonate to have a lower elastic coefficient than rubber. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have polycarbonate have a lower elastic coefficient than rubber. The polycarbonate case is made to be firm for support and protection while the rubber is used for isolation.

Regarding claim 23, see the rejection of the parent claim concerning the subject matter this claim depends from. MARKOW further discloses that second material is a polymeric material (polycarbonate, see column 6 lines 48-49).

Regarding claim 27, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not explicitly disclose that the hole is provided on the bottom of said resonator box. Nevertheless, the examiner takes official notice that it would have been obvious to place the hole anywhere on the box. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the hole is provided on the bottom of said resonator box. Having the wire pass through the box at this point is advantageous in that it provides the shortest path to the second part of the computer (see figure 2).

Regarding claim 28, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not explicitly disclose that the resonance box has electric terminals to which signal leads of said piezoelectric oscillator are connected by soldering or by means of connectors. Nevertheless, the examiner takes official notice that it would have been obvious to provide the resonance box with electric terminals and to which signal leads of said piezoelectric oscillator are connected by soldering or by means of connectors. By way of example, it is common for speaker drive units to be equipped with an electric terminal. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to have the resonance box with electric terminals and to which signal leads of said piezoelectric oscillator are connected by soldering or by means of connectors. This allows the resonance box to be assembled separate from the rest of the electronics, thus simplifying the construction of the intimate device.

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7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over MARKOW (US 6,137,890 A) in view of an examiner's official notice and further in view of ICHIKAWA et al (US 4,802,742 A).

Regarding claim 24, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not explicitly disclose that an elastic coefficient of said first material (MARKOW discloses that the first material is a polycarbonate material) is substantially identical with that of said thin flat display (MARKOW discloses that the display is an LCD display). ICHIKAWA et al discloses an LCD display made from a polycarbonate material (abstract). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the LCD display of MARKOW to be made of a polycarbonate material. Since both the "first material" and the display would be made of the same material they would have a substantially identical elastic coefficient. Using a polycarbonate material for an LCD is beneficial in that it allows the display to be thin, lightweight, large-sized and inexpensive.

8. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over MARKOW (US 6,137,890 A) in view of KUBO et al (US 6,795,715 B1).

Regarding claim 31, see the rejection of the parent claim concerning the subject matter this claim depends from. However, MARKOW does not explicitly disclose that a core camera and a microphone are provided on the front face of said mobile information terminal. KUBO et al disclose a mobile information terminal including a core camera and a microphone are provided on the front face as well as a speaker and display

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(column 4 line 46 to column 6 line 13). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the invention of MARKOW to be used in the device of KUBO et al. Replacing the separate display and speaker in KUBO et al with the combined speaker and display of MARKOW would save space on the front face of the mobile information terminal. This is beneficial in that mobile information terminals are designed to be small to enhance their mobility, thus front face real estate is at a premium. Eliminating the space of the separate speaker allows this space to be used for other things.

9. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over YASUKAWA et al (US 5,787,054 A) in view of MARKOW (US 6,137,890 A).

Regarding claim 32, YASUKAWA et al discloses a wristwatch with an LCD display and a piezoelectric sound producing device (column 6 lines 1-12 and column 6 lines 50-67). However, YASUKAWA et al does not disclose a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box. MARKOW discloses a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box (column 6 line 44 to column 8 line 4). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the combination speaker and display of MARKOW in the wristwatch of YASUKAWA et al. Replacing the separate display and speaker in YASUKAWA et al with the combined speaker and display of MARKOW would save space in the wristwatch. This is beneficial in that

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wristwatches are designed to be small to enhance their comfort to a user, thus space at a premium. Eliminating the space of the separate speaker allows this space to be used for other things.

10. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over MIZOGUCHI et al (US 6,169,847A) in view of MARKOW (US 6,137,890 A).

Regarding claim 33, MIZOGUCHI et al discloses a portable DVD player with a display and a sound producing device (see figure 4). However, MIZOGUCHI et al does not disclose a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box. MARKOW discloses a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box (column 6 line 44 to column 8 line 4). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the combination speaker and display of MARKOW in the portable DVD player of MIZOGUCHI et al. Replacing the separate display and speaker in MIZOGUCHI et al with the combined speaker and display of MARKOW would save space. This is beneficial in that portable DVD players are designed to be small to enhance their mobility, thus space at a premium. Eliminating the space of the separate speaker allows this space to be used for other things.

11. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over KUBO et al (US 6,795,715 B1) in view of MARKOW (US 6,137,890 A) and further in view of LIN (US 4,979,219 A).

Regarding claim 34, KUBO et al discloses a portable telephone with a display and a sound producing device (see figure 4). However, KUBO et al does not disclose a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box. Nor does KUBO et al disclose a plurality of sound openings provided adjacent to said thin flat display on the top surface of said resonance box. MARKOW discloses a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box (column 6 line 44 to column 8 line 4). LIN discloses a plurality of sound openings are provided adjacent to a resonance box (column 2 line 56 to 57). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the combination speaker and display of MARKOW in the portable telephone of KUBO et al and for there to be a plurality of sound openings provided. Replacing the separate display and speaker in KUBO et al with the combined speaker and display of MARKOW would save space on the front face of the mobile information terminal. This is beneficial in that mobile information terminals are designed to be small to enhance their mobility, thus front face real estate is at a premium. Eliminating the space of the separate speaker allows this space to be used for other things. Moreover, the combination of KUBO et al and MARKOW would benefit from the sound openings of LIN in that the modification would result in an enhanced resonance effect of the sound waves, thus the volume in decibels of the speaker is promoted and the acoustic property is also improved.

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12. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over SHIOZAKI (US 6,215,524 B1) in view of an examiner's official notice and MARKOW (US 6,137,890 A) and further in view of LIN (US 4,979,219 A).

Regarding claim 35, SHIOZAKI disclose a video camera with a display (abstract). However SHIOZAKI does not disclose that the camera has a speaker. Nor does SHIOZAKI disclose a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box. Further, SHIOZAKI does not disclose a plurality of sound openings provided adjacent to said thin flat display on the top surface of said resonance box. The examiner takes official notice that it was known in the art at the time the invention was made for a video camera to have a speaker. MARKOW discloses a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box (column 6 line 44 to column 8 line 4). LIN discloses a plurality of sound openings are provided adjacent to a resonance box (column 2 line 56 to 57). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the combination speaker and display of MARKOW in the portable telephone of SHIOZAKI and for there to be a plurality of sound openings provided. Having a speaker in a video recorder allows a user to listen to audio during playback that was recorded. Replacing the separate display and speaker in SHIOZAKI with the combined speaker and display of MARKOW would save space on the front face of the mobile information terminal. This is beneficial in that mobile information terminals are designed to be small to enhance their mobility,



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thus front face real estate is at a premium. Eliminating the space of the separate speaker allows this space to be used for other things. Moreover, the combination of SHIOZAKI and MARKOW would benefit from the sound openings of LIN in that the modification would result in an enhanced resonance effect of the sound waves, thus the volume in decibels of the speaker is promoted and the acoustic property is also improved.

Regarding claim 36, see the rejection of the parent claim concerning the subject matter this claim depends from. SHIOZAKI further discloses that the display (and thus resonance box) is provided in a swingable lid of said video camera (see figures 3A-4C).

Regarding claim 37, SHIOZAKI disclose an apparatus for recording and reproducing video and acoustic information with a display (abstract). However SHIOZAKI does that the camera has a speaker. Nor does SHIOZAKI disclose a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box. Further, SHIOZAKI does not disclose a plurality of sound openings provided adjacent to said thin flat display on the top surface of said resonance box. The examiner takes official notice that it was known in the art at the time the invention was made for a video camera to have a speaker. MARKOW discloses a resonance box; a piezoelectric oscillator provided on a bottom surface of said resonance box; and a thin flat display formed on a top surface of said resonance box (column 6 line 44 to column 8 line 4). LIN discloses a plurality of sound openings are provided adjacent to a resonance box (column 2 line 56 to 57). Therefore it would have been obvious to a person of ordinary

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skill in the art at the time the invention was made to use the combination speaker and display of MARKOW in the portable telephone of SHIOZAKI and for there to be a plurality of sound openings provided. Having a speaker in a video recorder allows a user to listen to audio during playback that was recorded. Replacing the separate display and speaker in SHIOZAKI with the combined speaker and display of MARKOW would save space on the front face of the mobile information terminal. This is beneficial in that mobile information terminals are designed to be small to enhance their mobility, thus front face real estate is at a premium. Eliminating the space of the separate speaker allows this space to be used for other things. Moreover, the combination of SHIOZAKI and MARKOW would benefit from the sound openings of LIN in that the modification would result in an enhanced resonance effect of the sound waves, thus the volume in decibels of the speaker is promoted and the acoustic property is also improved.

### ***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. KUMADA (4,496,247 A)

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond B. Persino whose telephone number is (703) 308-7528. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on (703) 308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond B. Persino  
Examiner  
Art Unit 2682

RY

RP

  
VIVIAN CHIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600